

IN THE CLAIMS:

Please amend claims 1, 8-9, 11, 14, and 16 as follows:

1. (Currently Amended) A scheduling apparatus performing job scheduling of a parallel computer system having a plurality of processor elements, comprising:

a determining device determining whether or not to move a first job currently being executed by a processor element to a different processor element; and

an assigning device assigning a second job currently being executed to the plurality of processor elements so that a migration process of the first job is performed, if it is determined that the first job is to be moved to the different processor element,

wherein said parallel computer system performs scheduling in respective hierarchies and rearranges jobs according to a respective order of said hierarchies, said hierarchies comprising:

a first hierarchy with sequential process at the start-up of a system from when the system starts up until when a queue is filled with jobs;

a second hierarchy with static scheduling of a job within a queue;

a third hierarchy with dynamic scheduling when a job is entered from a queue into a processor element, that is input/output between the processor element and an external auxiliary storage device; and

a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element.

2. (Original) The scheduling apparatus according to claim 1, further comprising

a monitoring device monitoring a load state of the plurality of processor elements, wherein

if a load distribution imbalance occurs between the plurality of processor elements, said assigning device assigns the second job to the plurality of processor elements.

3. (Original) The scheduling apparatus according to claim 1, wherein:
said determining device generates a job information table including information of the second job, determines a job to be moved among jobs within the job information table, and generates a relocation list including information of a job relocated on the plurality of processor elements; and

 said assigning device assigns the second job to the plurality of processor elements based on the relocation list.

4. (Original) The scheduling apparatus according to claim 1, wherein

said determining device calculates a cost required for the migration process of the first job, and determines whether or not to move the first job to the different processor based on a calculated cost.

5. (Original) The scheduling apparatus according to claim 1, wherein said determining device estimates an execution cost of the first job based on execution history information of the first job, and determines whether or not to let the first job migrate to the different processor by using an estimated execution cost.

6-7. (Canceled)

8. (Currently Amended) A parallel computer system having a plurality of processor elements, comprising:
 a determining device determining whether or not to move a first job currently being executed by a processor element to a different processor element; and
 a scheduling device performing scheduling of a second job currently being executed so that a migration process of the first job is performed, if it is determined that the first job is to be moved to the different processor,

 wherein said parallel computer system performs scheduling in respective hierarchies and rearranges jobs according to a respective order of said hierarchies, said hierarchies comprising:

a first hierarchy with sequential process at the start-up of a system from when the system starts up until when a queue is filled with jobs;

a second hierarchy with static scheduling of a job within a queue;

a third hierarchy with dynamic scheduling when a job is entered from a queue into a processor element, that is input/output between the processor element and an external auxiliary storage device; and

a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element.

9. (Currently Amended) A computer-readable storage medium on which is recorded a program for causing a computer which perform job scheduling of a parallel computer system having a plurality of processor elements to execute:

determining whether or not to move a first job currently being executed by a processor element to a different processor; and

assigning a second job currently being executed to the plurality of processor elements so that a migration process of the first job is performed, if it is determined that the first job is to be moved to the different processor,

wherein said program causes said parallel computer system performs scheduling in respective hierarchies and rearranges jobs according to a respective order of said hierarchies, said hierarchies comprising:

a first hierarchy with sequential process at the start-up of a system from when the system starts up until when a queue is filled with jobs;

a second hierarchy with static scheduling of a job within a queue;

a third hierarchy with dynamic scheduling when a job is entered from a queue into a processor element, that is input/output between the processor element and an external auxiliary storage device; and

a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element.

10. (Canceled)

11. (Currently Amended) A scheduling apparatus performing job scheduling of a parallel computer system having a plurality of processor elements, comprising:

determining means for determining whether or not to move a first job currently being executed by a processor element to a different processor element; and

assigning means for assigning a second job currently being executed to the plurality of processor elements so that a migration process of the first job is performed, if it is determined that the first job is to be moved to the different processor element,

wherein said parallel computer system performs scheduling in respective hierarchies and rearranges jobs according to a respective order of said hierarchies, said hierarchies comprising:

a first hierarchy with sequential process at the start-up of a system from when the system starts up until when a queue is filled with jobs;

a second hierarchy with static scheduling of a job within a queue;

a third hierarchy with dynamic scheduling when a job is entered from a queue into a processor element, that is input/output between the processor element and an external auxiliary storage device; and

a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element.

12-13. (Canceled)

14. (Currently Amended) A propagation signal for propagating a computer program to a computer, the program causing the computer to perform:

determining whether or not to move a first job currently being executed by a processor element to a different processor; and

assigning a second job currently being executed to the plurality of processor elements so that a migration process of the first job is performed, if it is determined that the first job is to be moved to the different processor element,

wherein said program causes said computer performs scheduling in respective hierarchies and rearranges jobs according to a respective order of said hierarchies, said hierarchies comprising:

 a first hierarchy with sequential process at the start-up of a system from when the system starts up until when a queue is filled with jobs;

 a second hierarchy with static scheduling of a job within a queue;

 a third hierarchy with dynamic scheduling when a job is entered from a queue into a processor element, that is input/output between the processor element and an external auxiliary storage device; and

 a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element.

15. (Canceled)

16. (Currently Amended) A scheduling method performing job scheduling of a parallel computer system having a plurality of processor elements, comprising:

 determining whether or not to move a first job currently being executed by a processor element to a different processor element; and

 assigning a second job currently being executed to the plurality of processor elements so that a migration process of the first job is performed, if it is determined that the first job is to be moved to the different processor element,

wherein said program causes said computer performs scheduling in respective hierarchies and rearranges jobs according to a respective order of said hierarchies, said hierarchies comprising:

- a first hierarchy with sequential process at the start-up of a system from when the system starts up until when a queue is filled with jobs;
- a second hierarchy with static scheduling of a job within a queue;
- a third hierarchy with dynamic scheduling when a job is entered from a queue into a processor element, that is input/output between the processor element and an external auxiliary storage device; and
- a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element.